

Translation

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY
(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference S6322SMBMR		FOR FURTHER ACTION	See Form PCT/IPEA/416																								
International application No. PCT/FR2004/050380	International filing date (day/month/year) 10.08.2004	Priority date (day/month/year) 21.08.2003																									
International Patent Classification (IPC) or national classification and IPC C21D1/613, C21D1/62																											
Applicant L'AIR LIQUIDE SOCIETE ANONYME A DIRECTOIRE ET CONSEIL DE SURVEILLANCE POUR L'ETUDE ET L'EXPLOITATION DES PROCEDES GEORGES																											
<p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of <u>6</u> sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p>a. <input type="checkbox"/> (sent to the applicant and to the International Bureau) a total of _____ sheets, as follows:</p> <p><input type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</p> <p><input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</p> <p>b. <input type="checkbox"/> (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) _____, containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p> <p>4. This report contains indications relating to the following items:</p> <table border="0"><tr><td><input checked="" type="checkbox"/></td><td>Box No. I</td><td>Basis of the report</td></tr><tr><td><input type="checkbox"/></td><td>Box No. II</td><td>Priority</td></tr><tr><td><input type="checkbox"/></td><td>Box No. III</td><td>Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</td></tr><tr><td><input type="checkbox"/></td><td>Box No. IV</td><td>Lack of unity of invention</td></tr><tr><td><input checked="" type="checkbox"/></td><td>Box No. V</td><td>Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</td></tr><tr><td><input type="checkbox"/></td><td>Box No. VI</td><td>Certain documents cited</td></tr><tr><td><input type="checkbox"/></td><td>Box No. VII</td><td>Certain defects in the international application</td></tr><tr><td><input checked="" type="checkbox"/></td><td>Box No. VIII</td><td>Certain observations on the international application</td></tr></table>				<input checked="" type="checkbox"/>	Box No. I	Basis of the report	<input type="checkbox"/>	Box No. II	Priority	<input type="checkbox"/>	Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability	<input type="checkbox"/>	Box No. IV	Lack of unity of invention	<input checked="" type="checkbox"/>	Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement	<input type="checkbox"/>	Box No. VI	Certain documents cited	<input type="checkbox"/>	Box No. VII	Certain defects in the international application	<input checked="" type="checkbox"/>	Box No. VIII	Certain observations on the international application
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Date of submission of the demand		Date of completion of this report																									
Name and mailing address of the IPEA/EP		Authorized officer																									
Facsimile No.		Telephone No.																									

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/FR2004/050380

Box No. I Basis of the report

1. With regard to the language, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
- ☐ This report is based on translations from the original language into the following language _____, which is the language of a translation furnished for the purposes of:
- ☐ international search (Rule 12.3 and 23.1(b))
- ☐ publication of the international application (Rule 12.4)
- ☐ international preliminary examination (Rule 55.2 and/or 55.3)
2. With regard to the elements of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:
- ☐ the international application as originally filed/furnished
- ☒ the description:
- pages 1-13 _____ as originally filed/furnished
- pages* _____ received by this Authority on _____
- pages* _____ received by this Authority on _____
- ☒ the claims:
- nos. 1-6 _____ as originally filed/furnished
- nos.* _____ as amended (together with any statement) under Article 19
- nos.* _____ received by this Authority on _____
- nos.* _____ received by this Authority on _____
- ☒ the drawings:
- sheets 1-3 _____ as originally filed/furnished
- sheets* _____ received by this Authority on _____
- sheets* _____ received by this Authority on _____
- ☐ a sequence listing and/or any related table(s) – see Supplemental Box Relating to Sequence Listing.
3. ☐ The amendments have resulted in the cancellation of:
- ☐ the description, pages _____
- ☐ the claims, nos. _____
- ☐ the drawings, sheets/figs _____
- ☐ the sequence listing (*specify*): _____
- ☐ any table(s) related to sequence listing (*specify*): _____
4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
- ☐ the description, pages _____
- ☐ the claims, nos. _____
- ☐ the drawings, sheets/figs _____
- ☐ the sequence listing (*specify*): _____
- ☐ any table(s) related to sequence listing (*specify*): _____

* If item 4 applies, some or all of those sheets may be marked "superseded."

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

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Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	1-6	YES
	Claims		NO
Inventive step (IS)	Claims	1-6	YES
	Claims		NO
Industrial applicability (IA)	Claims	1-6	YES
	Claims		NO

2. Citations and explanations (Rule 70.7)

1. In the present report, reference is made to the following documents:

D1: EP-A-1 211 329 (PRAXAIR TECHNOLOGY INC)
5 June 2002 (2002-06-05);

D2: EP-A-0 451 050 (AIR LIQUIDE) 9 October 1991
(1991-10-09);

D3: EP-A-0 388332 (ETUDES CONST MECANIQUES)
19 September 1990 (1990-09-19);

D4: FR-A-2 835 907 (AIR LIQUIDE) 15 August 2003
(2003-08-15);

D5: FR-A-2 634 866 (THIERRY DIMIER TRAITEMENTS
THE) 2 February 1990 (1990-02-02);

D6: HOLM T ET AL: "HELIUM RECOVERY AND CLEANING
FOR HIGH-PRESSURE GAS QUENCHING CONNECTED TO AN
ATMOSPHERE FURNACE" HEAT TREATMENT OF METALS,
BIRMINGHAM, GB, vol. 27, no. 1, 2000, pages
9-12, XP009014980 ISSN: 0305-4829.

2. Document D5, which is considered to be the most relevant prior art, describes (the references between parentheses apply to said document):

Box No. V

Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability;
citations and explanations supporting such statement

a method for recovering quenching nitrogen,
including the following steps:

- carrying out the quenching operation under pressure;
- discharging the nitrogen from the quenching cell to the flexible bag by equalising the pressure to atmospheric pressure; and
- pumping the gas to the buffer tank at a flow rate lower than in the preceding step.

The subject matter of independent claim 1 differs from this method in that:

- the intermediate tank is mounted on a bypass from the main connection between the quenching cell and the buffer tank.

The technical effect of this difference is to provide a step-quenching method that has optimal compressor efficiency and reduced waiting time.

2.1 It follows that the subject matter of claim 1 is novel (PCT Article 33(2)).

The problem that the present invention is intended to solve can be considered to be that of:

- providing a step-quenching method while ensuring optimal compressor efficiency and a shorter load transfer interval.

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Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
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2.2 The solution to this problem, as proposed in claim 1 of the present application, is considered to involve an inventive step (PCT Article 33(3)), for the following reasons:

None of the cited documents discloses the solution of mounting the intermediate tank in parallel so as to provide an optimally efficient step-quenching method, nor does such a solution appear to be obvious therefrom.

2.3 Claims 2-6 are dependent on claim 1 and, as such, therefore also fulfil the PCT requirements of novelty and inventive step.

Box No. VIII Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

1. It is clear from the table on page 12 and figure 3 that the following method step is essential for the definition of the invention:

- discharging the gas from the treatment cell to the buffer store during the quenching method (stepping).

Indeed, according to the above table and figure, the desired effect also results from the fact that the treatment cell is continuously unloaded during the quenching method (stepping).

Since independent claim 1 does not contain this feature, it does not fulfil the requirements of PCT Article 6 in conjunction with PCT Rule 6.3(b), which stipulate that each independent claim must contain all of the technical features essential for the definition of the invention.